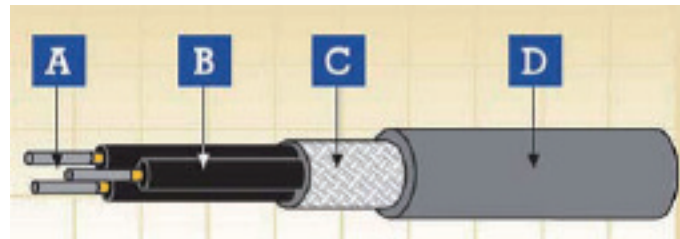


## FIREROL Medium Wall Multicore Overall Screened & Fire Resistant Cables 300/500 V or 0.6/1 kV EN 50264-3-2(FRL-MW-05M-OS-AS<sup>+</sup>/FRL-MW-1M-OS-AS<sup>+</sup>)



A. Conductor B. Insulation C. Screen D. Sheath

### Application

- Used as power and control cable for protected installations inside and outside of rail and transport vehicles, where handling and installation cost are an important factor.
- Used in control, auxiliary and main circuit wiring such as cable harnesses, switchboards and control panels, driver desks etc.c.

### Construction

#### Conductor

Flexible tinned annealed copper wires, stranded as per HD 383 (IEC 60228) class 5

#### Insulation

Mica tape+LSZH elastomeric compound as defined in EN 50264-1 (EI 106 to EI 110)

#### Overall Screen

Tinned annealed copper wires

#### Outer Sheath

LSZH elastomeric compound as defined in EN 50264-1 (EM 101 to EI 104)

### Electrical & Mechanical Properties

#### Nominal Voltage

300/500 V or 0.6/1 kV

#### Max. Conductor Temperature

90 °C (fixed installation)

#### Min. Permissible Ambient Temperature

-25 °C /-40 °C (fixed installation)

#### Bending Radius

Fixed installation:

10 x Overall Diameter (D<12mm);

12 x Overall Diameter (D>12mm)

Flexible installation:

20 x Overall Diameter (D<12mm);

25 x Overall Diameter (D>12mm)

### Chemical & Environmental Properties

EN 60684-2

EN 50305; EN 60811-2-1

EN 50305

No fluorine

Resistance to mineral oil & fuel oil, acid & alkali

Resistance to ozone

### Fire Performance for Rolling Stock Application

EN 50306-2

DIN 5510-2

BS 6853

NF F 16-101

Hazard levels HL1, HL2/HL3, HL4

Protection level 1/2/3/4

Interior use 1a, 1b, II; Exterior use 1a, 1b, II

F0

### Fire Performance in General

EN 50265-2-1; IEC 60332-1-2; NF C 32-070 2.1 (C2)

EN 50266-2-4 + EN 50305; IEC 60332-3-24;

NF C 32-070 2.2 (C1); VDE 0472 Teil 804

EN 50268-2; IEC 61034-2; NF C 32-073 ;

Vertical flame propagation for a single insulated wire or cable

Vertical flame spread of vertically mounted bunched wires or cables

Low Smoke Emission

NF C 20-902; NF F 16 101; VDE 0472 Teil 816  
 EN 50267-2-1; IEC 60754-1; NF C 32-074;  
 NF C 20-454; VDE 0472 Teil 815  
 EN 50267-2-2/3; IEC 60754-2; NF C 32-074;  
 NF C 20-453; VDE 0472 Teil 813  
 EN 50305; NF X 70-100; NF F 63 808; TM1-04; BS6853  
 NF F 63 808; BS6853; NF F 16 101  
 IEC60331-21

Halogen Free

Low Corrosivity (Acidity & Conductivity)

Low Toxicity

Smoke Index

The circuit integrity test under fire of cables rated 0.6/1.0kV and below

**FRL-MW-05M-OS-AS<sup>+</sup> 300/500 V**

Nominal Cross-Sectional Area (a)	Conductor Diameter (b)	Min. Mean Thickness of Insulation	Core Dimensions		Min. Screen Wire Diameter	Min. Average Sheath Thickness	Overall Diameter		Weight	Max. Conductor Resistance 20 °C	Min. Insulation Resistance	
			Min.	Max.			Min.	Max.			EI 110 20 °C	EI 106/7/8/9 20 °C
n x mm <sup>2</sup>	mm	mm	mm	mm	mm	mm	mm	mm	kg/km	Ω/km	MΩ x km	MΩ x km
2 x 1	1.25	0.4	2.24	2.64	0.16	0.6	6.24	7.34	81	20.0	15.0	7.5
4 x 1	1.25	0.4	2.24	2.64	0.16	0.7	7.24	8.44	132	20.0	15.0	7.5
7 x 1	1.25	0.4	2.24	2.64	0.16	0.7	8.44	9.84	203	20.0	15.0	7.5
9 x 1	1.25	0.4	2.24	2.64	0.21	0.8	10.44	12.14	275	20.0	15.0	7.5
12 x 1	1.25	0.4	2.24	2.64	0.21	0.8	11.14	12.94	346	20.0	15.0	7.5
19 x 1	1.25	0.4	2.24	2.64	0.26	1.0	13.44	15.64	538	20.0	15.0	7.5
24 x 1	1.25	0.4	2.24	2.64	0.26	1.0	15.44	18.04	667	20.0	15.0	7.5
32 x 1	1.25	0.4	2.24	2.64	0.26	1.0	16.84	19.64	846	20.0	15.0	7.5
37 x 1	1.25	0.4	2.24	2.64	0.26	1.0	17.44	20.34	953	20.0	15.0	7.5
40 x 1	1.25	0.4	2.24	2.64	0.26	1.2	18.44	21.54	1044	20.0	15.0	7.5
4 x 1.5	1.5	0.5	2.64	3.14	0.16	0.7	8.24	9.64	180	13.7	14.0	7.0
7 x 1.5	1.5	0.5	2.64	3.14	0.21	0.7	9.84	11.54	295	13.7	14.0	7.0
9 x 1.5	1.5	0.5	2.64	3.14	0.21	1.0	12.34	14.44	395	13.7	14.0	7.0
12 x 1.5	1.5	0.5	2.64	3.14	0.21	1.0	13.24	15.44	497	13.7	14.0	7.0
19 x 1.5	1.5	0.5	2.64	3.14	0.26	1.0	15.54	18.14	750	13.7	14.0	7.0
24 x 1.5	1.5	0.5	2.64	3.14	0.26	1.2	18.34	21.44	955	13.7	14.0	7.0
32 x 1.5	1.5	0.5	2.64	3.14	0.26	1.2	20.04	23.44	1215	13.7	14.0	7.0
37 x 1.5	1.5	0.5	2.64	3.14	0.26	1.2	20.74	24.24	1372	13.7	14.0	7.0
4 x 2.5	1.95	0.5	3.14	3.64	0.21	0.7	9.44	11.04	249	8.21	13.0	6.5
7 x 2.5	1.95	0.5	3.14	3.64	0.21	0.8	11.34	13.24	398	8.21	13.0	6.5
9 x 2.5	1.95	0.5	3.14	3.64	0.26	1.0	14.14	16.54	539	8.21	13.0	6.5
12 x 2.5	1.95	0.5	3.14	3.64	0.26	1.0	15.24	17.74	681	8.21	13.0	6.5
19 x 2.5	1.95	0.5	3.14	3.64	0.26	1.2	18.04	21.04	1027	8.21	13.0	6.5
24 x 2.5	1.95	0.5	3.14	3.64	0.26	1.2	20.84	24.34	1278	8.21	13.0	6.5

(a)= One earth conductor (green/yellow) can be included upon request

(b)= For information, indicative only

# EN 50264 Rolling Stock Cables

FRL-MW-1M-OS-AS+ 0.6/1 kV

Nominal Cross-Sectional Area (a)	Conductor Diameter (b)	Min. Mean Thickness of Insulation	Core Dimensions		Min. Screen Wire Diameter	Min. Average Sheath Thickness	Overall Diameter		Weight	Max. Conductor Resistance 20 °C	Min. Insulation Resistance	
			Min.	Max.			Min.	Max.			EI 110 20 °C	EI 106/7/8/9 20 °C
<b>TWO CORES</b>												
1.5	1.5	0.7	3.04	3.54	0.16	0.70	8.14	10.14	121	13.7	21.0	10.5
2.5	1.95	0.7	3.44	4.04	0.16	0.70	8.94	10.94	157	8.21	17.2	8.6
4	2.5	0.7	4.04	4.64	0.21	0.80	10.44	12.94	224	5.09	14.2	7.1
6	3.0	0.7	4.44	5.24	0.21	0.80	11.14	13.84	287	3.39	12.2	6.1
10	3.9	0.7	5.34	6.14	0.21	1.00	13.64	16.84	424	1.95	9.8	4.9
16	5.0	0.7	6.34	7.44	0.26	1.00	16.24	20.04	606	1.24	7.9	3.9
25	6.4	0.9	8.04	9.34	0.26	1.20	20.04	24.84	909	0.795	7.3	3.6
35	7.7	0.9	9.24	10.84	0.31	1.40	23.04	28.14	1213	0.565	6.7	3.3
50	9.2	1.0	10.84	12.64	0.31	1.40	26.64	32.54	1631	0.393	6.3	3.1
<b>THREE CORES</b>												
1.5	1.5	0.7	3.04	3.54	0.16	0.70	8.64	10.64	156	13.7	21.0	10.5
2.5	1.95	0.7	3.44	4.04	0.16	0.70	9.44	11.64	207	8.21	17.2	8.6
4	2.5	0.7	4.04	4.64	0.21	0.80	11.04	13.54	295	5.09	14.2	7.1
6	3.0	0.7	4.44	5.24	0.21	0.80	11.84	14.54	384	3.39	12.2	6.1
10	3.9	0.7	5.34	6.14	0.26	1.00	14.64	18.24	593	1.95	9.8	4.9
16	5.0	0.7	6.34	7.44	0.26	1.20	17.64	21.54	848	1.24	7.9	3.9
25	6.4	0.9	8.04	9.34	0.26	1.20	21.54	26.34	1251	0.795	7.3	3.6
35	7.7	0.9	9.24	10.84	0.31	1.40	24.74	30.04	1674	0.565	6.7	3.3
50	9.2	1.0	10.84	12.64	0.31	1.60	28.54	34.84	2309	0.393	6.3	3.1
<b>FOUR CORES</b>												
1.5	1.5	0.7	3.04	3.54	0.16	0.70	9.34	11.54	194	13.7	21.0	10.5
2.5	1.95	0.7	3.44	4.04	0.21	0.80	10.64	13.14	280	8.21	17.2	8.6
4	2.5	0.7	4.04	4.64	0.21	0.80	12.04	14.74	371	5.09	14.2	7.1
6	3.0	0.7	4.44	5.24	0.21	1.00	13.34	16.34	503	3.39	12.2	6.1
10	3.9	0.7	5.34	6.14	0.26	1.00	16.14	19.74	752	1.95	9.8	4.9
16	5.0	0.7	6.34	7.44	0.26	1.20	19.54	23.84	1082	1.24	7.9	3.9
25	6.4	0.9	8.04	9.34	0.31	1.40	24.24	29.54	1666	0.795	7.3	3.6
3x35+25	7.7/6.4	0.9/0.9	9.24/8.04	10.84/9.34	0.31	1.40	27.14	33.14	2152	0.565/0.795	6.7	3.3
3x50+25	9.2/6.4	1.0/0.9	10.84/8.04	12.64/9.34	0.31	1.60	31.74	38.44	2946	0.393/0.795	6.3	3.1

(a)= For information, indicative only

